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EXAMINER	
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Please find below a communication from the EXAMINER in charge of this application.

Commissioner of Patents

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 17

Application Number: 08/779,599
Filing Date: January 7, 1998
Appellant(s): David V. Goeddel and Mike Rothe

Mailed on July 30, 1998 Technology Center

Ginger R. Dreger
For Appellant

EXAMINER'S ANSWER

This is in response to appellant's brief on appeal filed May 18, 1998.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is essentially correct. A human protein of the instant invention, if one exists, would be a naturally occurring compound and, therefore, not a "novel" human protein.

(6) Issues

The appellant's statement of the issues in the brief is correct.

(7) Grouping of Claims

The rejection of claims 31 to 33 stand or fall together because appellant's brief does not include a statement that this grouping of claims does not stand or fall together and reasons in support thereof. See 37 CFR 1.192(c)(7).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

No prior art is relied upon by the examiner in the rejection of the claims under appeal.

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 31 to 33 are rejected under 35 U.S.C. § 112, first paragraph, as containing subject matter which is not described in the instant specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claim invention or to enable one skilled in the art to make and use the claimed invention for those reasons of record in section 3 of Paper Number 6. The instant claims are directed to an isolated human protein which associates with the cytoplasmic domain of a tumor necrosis factor (TNF) receptor. The instant specification, however, does not describe even a single protein of human origin which meets the limitations of the instant claims. The instant specification describes the isolation of cDNAs encoding two murine proteins identified therein as TNF receptor associated factors (TRAFs) and the isolation of the proteins encoded thereby. It also contains ample suggestions that homologous human proteins

could be isolated by employing those methods that are routine in the art of molecular biology to screen a cDNA library constructed from mRNA of human origin with all or part of one of the murine cDNAs described therein. The instant specification provides no structural or functional information about a human TRAF and no evidence that the murine TRAFs disclosed therein are functionally or structurally predictive of homologous proteins from any other animal. In fact, the abstract of the Lewis et al. publication (P.N.A.S. 88:2830-2834, Apr. 1991), which was cited by Applicant, states that the amino acid sequences of the human and murine homologs of the type 1 TNF receptor are only 64% identical and that the amino acid sequences of the human and murine homologs of the type 2 TNF receptor are only 62% identical. Since the TNF receptors are not structurally and functionally conserved to any great extent between mammalian species an artisan would not reasonably expect the proteins associated therewith to be conserved between mice and humans. Therefore, the description of a cDNA encoding a TRAF protein and the protein encoded thereby from a mouse does not provide a practitioner of the art with sufficient written description of the claimed composition or the guidance needed to enable them to make and use a human TRAF protein.

Claims 31 to 33 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention for those reasons of record in section 4 of Paper Number 6.

Claims 31 to 33 are vague and indefinite because the instant specification does not identify that material property or combination of properties which is unique to and, therefore,

definitive of a TRAF protein. The material and functional limitations of these claims encompass any protein which is encoded by a cDNA that hybridizes to a nucleic acid probe consisting of at least 30 nucleotide bases from SEQ ID NO:1 or 3 of the instant application under the recited conditions. It is unclear what additional functional and/or structurally limitations are placed upon the claimed isolated human protein by the presence of the term "TRAF" in these claims. The text in the last paragraph on page 5 of the instant specification provides a basis for the origin of this term but it does not provide an unambiguous definition of it. Without knowing what structural and/or functional limitations are placed upon the instant claims by the presence of the term "TRAF" one can not determine if a protein which otherwise meets the limitations of the claims is encompassed or excluded by the presence of this term.

Claims read in light of spec.

These claims are indefinite because the term "about 30 to 50 bases" is vague and indefinite since one can not distinguish between that which is encompassed by this term and that which is excluded. One can not know if an oligonucleotide of 25 bases or 60 bases is or is not encompassed by this term. Because a nucleotide base is a discrete and indivisible structural unit, unlike a unit of measurement such as a foot, a pound or a gallon which are all infinitely divisible, the use of the term "about" to delineate the number of nucleotide bases in a polynucleotide is inappropriate since there appears to be nothing to prevent Appellant from simply reciting a greater or lesser number of polynucleotide bases if this is what they regard as the invention. Whereas one could reasonably interpret the term "about a gallon" as including

any volume which is more than three fourths of a gallon to less than a gallon and one fourth, one can not interpret "about 30 nucleotide bases" as more than 29.5 bases and less than 30.5 bases. Whereas it is conceded that the term "about" is not inherently vague and indefinite in all applications it does appear to be vague and indefinite when employed to indicate the minimum and maximum number of nucleotide bases permitted in a nucleic acid.

(11) Response to Argument

Claims 31 to 33 have been rejected under 35 U.S.C. 112, first paragraph, because the instant specification did not provide sufficient **written description** of "an isolated human tumor necrosis factor receptor associated factor (TRAF) **and** because it did not provide the guidance needed to **enable** an artisan to produce the claimed composition.

Applicant argues that the rejection of the instant claims for want of an enabling disclosure was incomplete because the factors articulated in *In re Wands*, 8 USPQ2d, 1400 (CAFC 1988) were allegedly not considered. Appellant is advised that the instant claims have not been rejected for undue breadth and, therefore, the factors considered in *Wands* is not at issue. The instant rejection is based upon the premise that one would not have a reasonable expectation of producing even a single embodiment of the claimed composition by following the guidance provided by the instant specification. If Appellant wishes to review the factors

recited in *Wands* as they apply to the instant rejection, then Appellant should note that the breadth of the claims is irrelevant since no embodiment is considered enabled, the instant application does not contain even a single working example of the claimed composition, and, as stated in the body of the rejection "since the TNF receptors are not structurally and functionally conserved between mammalian species an artisan would not reasonably expect the proteins associated therewith to be conserved between mice and humans", showing the art as related to mammalian tumor necrosis factors and their receptors has been established by the prior art of record as being unpredictable. All of these factors were addressed on the record. Further, one would not reasonably expect the guidance provided by the instant specification to lead to the claimed composition because it is based upon a premise that human produce a "TRAF" protein which is encoded by a cDNA which will hybridize to a probe which has been "derived" from one of the two disclosed murine nucleotide sequences under stringent hybridization conditions. As stated above, the amino acid sequences of the human and murine homologs of the type 1 TNF receptor are only 64% identical and that the amino acid sequences of the human and murine homologs of the type 2 TNF receptor are only 62% identical, showing that the prior art recognized the unpredictability of this art. Contrary to Appellant's assertion, amino acid sequences encoding homologous proteins from different mammals which are only 64% identical are not regarded in the art as having "substantial homology". All of these deficiencies were addressed in the rejection of record. In summary, in the absence of even a single working example of the claimed composition and in light of the art-established

unpredictability of tumor necrosis factor receptors an artisan does not have a reasonable expectation of producing the claimed composition by following the guidance provided by the instant specification.

Further, as stated in the final rejection, the fact that the instant specification discloses a method through which a nucleic acid encoding a "human TRAF" might or might not be isolated does not avoid the instant rejection because it is the isolated nucleic acid, not a method of isolating the nucleic acid, which is required to produce and define the claimed protein. *Amgen Inc. v. Chugai Pharmaceuticals Co. Ltd.*, 18 U.S.P.Q. 2d, 1016, held that;

> "A gene is a chemical compound, albeit a complex one, and it is well established in our law that conception of a chemical compound requires that the inventor be able to define it so as to distinguish it from other materials, and describe how to obtain it. *See Oka,* 849 F.2d at 583, 7 USPQ2d at 1171. Conception does not occur unless one has a mental picture of the structure of the chemical, or is able to define it by its method of preparation, its physical or chemical properties, or whatever characteristics sufficiently distinguish it. It is not sufficient to define it solely by its principal biological property, *e.g.,* encoding human erythropoietin, because an alleged conception having no more specificity than that is simply a wish to know the identity of any material with that biological property. We hold that when an inventor is unable to envision the detailed constitution of a gene so as to distinguish it from other materials, as well as a method for

obtaining it, conception has not been achieved until reduction to practice has occurred, *i.e.*, until after the gene has been isolated"

The instant specification does not provide "the detailed constitution" of an isolated nucleic acid encoding a human TRAF protein or of the protein encoded thereby. Therefore, Appellant has yet to conceive of the claimed compound or an isolated nucleic acid encoding it.

The instant claims are also rejected under 112, first paragraph, because the instant specification does not provide a written description of "an isolated human tumor necrosis factor receptor associated factor". Because the instant specification does not identify those properties which distinguish a human tumor necrosis factor receptor associated factor from a tumor necrosis factor receptor associated factor of baboon, rat, cow or, particularly, murine origin one would conclude that Appellant was not in possession of the claimed invention at the time that the instant application was filed. As stated in the recent decision in The Regents of the University of California v. Eli Lilly and Company, 43 USPQ2d 1398 (CAFC 1997):

"To fulfill the written description requirement, a patent specification must describe an invention and do so in sufficient detail that one skilled in the art can clearly conclude that "the inventor invented the claimed invention". Lockwood v. American Airlines, Inc., 107 F.3d 1565, 1572, 41 USPQ2d 1961, 1966 (1997); In re Gosteli, 872 F.2d 1008, 1012, 10 USPQ2d 1614, 1618 (Fed. Cir. 1980) ("[T]he description must clearly allow persons of ordinary skill in the art to recognize that [the inventor] invented what is claimed.") Thus, an applicant complies with the written description requirement "by describing the invention, with all its claimed limitations, not that which makes it obvious," and by using "such descriptive means as words, structures, figures, diagrams,

formulas, etc., that set forth the claimed invention." Lockwood, 107 F.3d 1565, 1572, 41 USPQ2d at 1966.

An adequate written description of a DNA, such as the cDNA of the recombinant plasmids and microorganisms of the '525 patent, "requires a precise definition, such as by structure, formula, chemical name, or physical properties," not a mere wish or plan for obtaining the claimed chemical invention. Fiers v. Revel, 984 F.2d 1164, 1171, 25 USPQ2d 1601, 1606 (Fed. Cir. 1993). Accordingly, "an adequate written description of a DNA requires more than a mere statement that it is part of the invention and reference to a potential method for isolating it; what is required is a description of the DNA itself." Id at 1170, 25 USPQ2d at 1606."

The instant claims are drawn to an isolated protein which is claimed only as a product-by-process. There is no adequate written description of that protein "such as by structure, formula, chemical name, or physical properties". The recited process through which the protein is to be made expressly requires an isolated cDNA encoding a human TRAF. The instant specification does not describe a cDNA encoding a human TRAF "by structure, formula, chemical name, or physical properties". The steps recited in the product-by-process claims constitute nothing more than a potential method of isolating that cDNA. Therefore, the instant specification fails at several levels to provide an adequate written description of an isolated human TRAF, as claimed.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

JOHN ULM
PRIMARY EXAMINER
GROUP 1800

JDU
July 29, 1998